$y = x^2 - 4x + 3$

two x-intercepts

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(3)}}{2}$$

$$= \frac{4 \pm \sqrt{4}}{2}$$

(two solutions)

$y = x^2 - 4x + 4$

one x-intercept

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(4)}}{2}$$

$$= \frac{4 \pm \sqrt{0}}{2}$$

(one repeated solution)

$y = x^2 - 4x + 6$

no x-intercepts

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(6)}}{2}$$

$$= \frac{4 \pm \sqrt{-12}}{2}$$

(no solutions)